



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/782,838

02/23/2004

Isao Yokokawa

118749

5427

25944

7590

06/13/2005

OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320

EXAMINER

LUU, CHUONG A

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/782,838 | <b>Applicant(s)</b><br>YOKOKAWA ET AL. |  |
|                              | <b>Examiner</b><br>Chuong A. Luu     | <b>Art Unit</b><br>2818                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/23/2004</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### **PRIOR ART REJECTIONS**

#### **Statutory Basis**

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

#### **The Rejections**

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aga et al (U.S. 6,140,210) in view of Yamagata (U.S. 6,653,209 B1).

Aga discloses a method of fabricating an SOI wafer with

(1) a method of producing an SOI wafer in which an SOI layer is formed on a buried oxide film by, at least implanting at least one kind of ion of hydrogen ion and a rare gas ion into the surface portion of a bond wafer to form an ion-implanted layer, bonding the bond wafer and a base wafer to each other through an oxide film, and delaminating the resultant bonded wafer at the ion-implanted layer, wherein assuming that X (nm) represents the thickness of the buried oxide film and (nm) represents the thickness of the SOI layer in the SOI wafer immediately after delaminating at the ion-implanted layer, when forming the ion-implanted layer, the ion implantation is carried out with the ion implantation conditions being set such that the sum  $X + Y$  of the thickness of the buried oxide film and the thickness of the SOI layer satisfies  $X + Y > 1500 - 14X$ ,

Art Unit: 2818

after which the bonding process and the delaminating process are carried out and, thereafter, a thinning treatment of the SOI layer carried out to make the SOI layer into a thin film having a predetermined thickness (see column 4, lines 14-65 and column 6, lines 8-48. Figure 1);

(2) wherein in forming the ion-implanted layer, the ion implantation is carried out with the ion implantation conditions being set such that the sum  $X+Y$  of the thickness of the buried oxide film and the thickness of the SOI layer becomes 390 nm or more when the thickness  $X$  of the buried oxide film is made into  $80 \leq X \leq 100$ , such that  $X+Y$  becomes 810 nm or more when  $X$  is made into  $50 \leq X < 80$ , and such that  $X + Y$  becomes 1090 nm or more when  $X$  is made into  $30 \leq X < 50$  (see column 6, lines 8-48. Figure 1);

(3) wherein the thinning treatment of the SOI layer is carried out by a sacrificial oxidation treatment;

(4) wherein the thinning treatment of the SOI layer is carried out by a sacrificial oxidation treatment;

(5) an SOI wafer produced by the method of producing an SOI wafer (see Figure 1);

(6) an SOI wafer produced by the method of producing an SOI wafer (see Figure 1);

(7) an SOI wafer produced by the method of producing an SOI wafer (see Figure 1);

(8) an SOI wafer produced by the method of producing an SOI wafer (see Figure 1).


Aga teaches everything above except for the thickness X of the buried oxide film is  $X \leq 100$  nm. However, Yamagata discloses a method for forming a silicon thin film with (1)....the thickness X of the buried oxide film is  $X \leq 100$  nm (see column 6, lines 62-65). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thickness X of the buried oxide film is  $X \leq 100$  of Aga's device (in accordance with the teaching of Yamagata) within the range as claimed for the purpose of providing for reduced power consumption and increase operational speed, and it also has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art and it is noted that the applicant does not disclose criticality in the ranges claimed. In re Aller, 105 USPQ 233 (see MPEP j 2144.05).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong A. Luu whose telephone number is (571) 272-1902. The examiner can normally be reached on M-F (6:15-2:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'C. Luu', with a stylized, cursive script.

Chuong Anh Luu  
Patent Examiner  
June 8, 2005